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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------------------------------------------------------------------------------------------------------|-------------|----------------------|---------------------|------------------|
| 10/621,595 | 07/17/2003 | George M. Murray | 1853-SPL | 2591 |
| 7590 | 06/30/2005 | | EXAMINER | |
| The Johns Hopkins University Applied Physics Laboratory 11100 Johns Hopkins Road Laurel, MD 20723-6099 | | | SUNG, CHRISTINE | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2878 | |

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|-----------------|---------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/621,595 | MURRAY ET AL. |
| | Examiner | Art Unit |
| | Christine Sung | 2878 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 17 July 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-18 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 17 July 2003 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>7/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 3 and 4 contains the trademark/trade name Teflon. Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademark/trade name is used to identify/describe polytetrafluoroethylene (PTFE) and, accordingly, the identification/description is indefinite.

2. Claim 3 is objected to because of the following informalities: The claim contains a spelling error on line two of the claim. “apetured” should read –apertured--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 11 is rejected under 35 U.S.C. 102(e) as being anticipated by Chandross et al. (US Pre Grant Publication 2003/0226971A1).

Regarding claim 11, Chandross discloses a liquid cocktail mixture (See page 2, paragraph [0027]) for detecting the presence of neutrons comprising:

A neutron absorber component or metal material (page 2, paragraph [0027]); and

A scintillator component (page 2, paragraph [0027]).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claim 1, 3, 4, 7-8 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chandross (US Pre Grant Publication 2003/0226971A1).

8. Regarding claim 1, Chandross discloses a system for detecting neutron radiation (Figure 1 and 2) comprising: a liquid cocktail mixture (element 25) comprised of a neutron absorber or a highly metal loaded solution and a scintillator (page 2, paragraph [0027]), said cocktail mixture housed in a tube (element 20) having a windowed portal at one end (where element 20 meets

element 40) of the tube such that neutrons that penetrate the tube react with the neutron absorber producing ionization that excites the scintillator and produces photons (page 2, paragraph [0027]); a photo-multiplier tube (element 30) coupled with the windowed portal for receiving the photons and converting the photons to electrical signals page 2, paragraph [0024]); and a processing device (element 95) for receiving and analyzing the electrical signals so as to provide a measurement pertaining to the presence and relative strength of neutron radiation (pages 2-3, paragraph [0030]). Although Chandross does not specify a mirror at one end of the tube, he does specify that the vessel is made of polytetrafluoroethlyene (see page 2, paragraph [0026]), which is inherently a light reflective material. Although Chandross does not specify a mirror at one end, it is obvious that since the vessel is made of a light reflecting material, the mirror is integrally a part of the end of the vessel. One of ordinary skill in the art would be motivated to have a mirror or reflective material in the vessel so that release photons or light can be properly directed to a detector, which will increase the accuracy of the data collected.

Regarding claim 3, Chandross discloses that the tube is made of Teflon, a known light reflecting material (page 2, paragraph [0026]).

Regarding claim 4, Chandross teaches that the tube is made of Teflon, and that the detector may be used for portable applications (page 2, paragraph [0021]).

Regarding claim 7-8 and 15-16, Chandross discloses the limitations set forth in claims 1 and 11, respectively but does not specify that the neutron absorber is made of sodium tetrafluoroborate or that it is made of a dipicolinic acid, however such materials are well known. One of ordinary skill in the art would be motivated to use the claimed materials with the

invention as disclosed by Chandross, as such materials are readily available and is manufactured easily, thus reducing the complexity of manufacturing the product.

9. Claims 2, 9-10, 12 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chandross (US Pre Grant Publication 2003/0226971A1) in view of Held (US Patent 3,470,390 A).

Regarding claims 2 and 9-10, Chandross disclose the limitations set forth in the independent claim but does not specify a wavelength shifter made of a rare chelate, namely europium, for converting light emitted by the scintillator to another wavelength. However, Held discloses a wavelengths shifter made of a rare chelate, europium (see column 4, lines 32-45 and column 4, lines 60-75). One of ordinary skill in the art would be motivated to use a wavelength shifter as disclosed by Held with the invention as disclosed by Chandross in order to increase the efficiency of the detection by properly matching the optimum radiation detected by the detector with the radiation emitted through the scintillator.

Regarding claims 12, 17 and 18, Chandross discloses the limitations set forth in claim 11, but does not specify a wavelength shifter made of a rare chelate, namely europium, for converting light emitted by the scintillator to another wavelength. However, Held discloses a wavelengths shifter made of a rare chelate, europium (see column 4, lines 32-45 and column 4, lines 60-75). One of ordinary skill in the art would be motivated to use a wavelength shifter as disclosed by Held with the invention as disclosed by Chandross in order to increase the efficiency of the detection by properly matching the optimum radiation detected by the detector with the radiation emitted through the scintillator.

10. Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chandross (US Pre Grant Publication 2003/0226971A1) in view of Yoshino et al. (US Patent 4,975,222 A)

Regarding claims 5 and 13, Chandross discloses the limitations set forth in claims 1 and 11, respectively, but do not disclose that the radiation absorber is made of lithium tetrafluoroborate. However, such a material is known in the art, as demonstrated by Yoshino, for the detection of neutrons (see column 7, lines 1-14). One of ordinary skill in the art would be motivated to use the material as disclosed by Yoshino with the invention as disclosed by Chandross, as such material is readily available and is manufactured easily, thus reducing the complexity of manufacturing the product.

11. Claims 6 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chandross (US Pre Grant Publication 2003/0226971A1) in view of Maeda (US Patent 4,620,939 A).

Regarding claims 6 and 14 , Chandross discloses the limitations set forth in claims 1 and 11, respectively, but do not disclose that the radiation absorber is made of lithium chloride. However, such a material is known in the art, as demonstrated by Maeda, for the detection of neutrons (see column 3, lines 39-46). One of ordinary skill in the art would be motivated to use the material as disclosed by Maeda with the invention as disclosed by Chandross, as such material is readily available and is manufactured easily, thus reducing the complexity of manufacturing the product.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. US Pre Grant Publication 2005/00135535A1- this reference discloses a neutron detector with absorbing scintillator particles.
- b. US Pre Grant Publication 2003/0175874A1- this reference discloses a neutron detector with a glass scintillator.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine Sung whose telephone number is 571-272-2448. The examiner can normally be reached on Monday- Friday 7-3 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christine Sung
Examiner
Art Unit 2878

CS



DAVID PORTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800